

***FlyBy Math™* Alignment**
Indiana's Academic Standards - Mathematics

Standard 3. Algebra and Functions

Students solve simple linear equations and inequalities. They interpret and evaluate expressions involving integer powers. They graph and interpret functions. They understand the concepts of slope* and rate.*

Indicator	<i>FlyBy Math™</i> Activities
8.3.5 Identify and graph linear functions and identify lines with positive and negative slope.	<p>--Represent distance, speed, and time relationship for constant speed cases using linear equations and a Cartesian coordinate system.</p> <p>--Interpret the slope of a line in the context of a distance-rate-time problem.</p>
8.3.6 Find the slope of a linear function given the equation and write the equation of a line given the slope and any point on the line.	<p>--Represent distance, speed, and time relationship for constant speed cases using linear equations and a Cartesian coordinate system.</p> <p>--Interpret the slope of a line in the context of a distance-rate-time problem.</p>
8.3.7 Demonstrate an understanding of rate as a measure of one quantity with respect to another quantity.	<p>--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.</p> <p>--Interpret the slope of a line in the context of a distance-rate-time problem.</p>
8.3.8 Demonstrate an understanding of the relationships among tables, equations, verbal expressions, and graphs of linear functions.	--Represent distance, speed, and time relationship for constant speed cases using tables, bar graphs, line graphs, equations and a Cartesian coordinate system.

Standard 5. Measurement

Students convert between units of measure and use rates and scale factors to solve problems. They compute the perimeter, area, and volume of geometric objects. They investigate how perimeter, area, and volume are affected by changes of scale.

Indicator	<i>FlyBy Math™</i> Activities
8.5.2 Solve simple problems involving rates and derived measurements for attributes such as velocity and density.	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios.

Standard 6. Data Analysis and Probability

Students collect, organize, represent, and interpret relationships in data sets that have one or more variables. They determine probabilities and use them to make predictions about events.

Indicator	<i>FlyBy Math™</i> Activities
8.6.4 Analyze, interpret, and display single- and two-variable data in appropriate bar, line, and circle graphs; stem-and-leaf plots*; and box-and-whisker plots* and explain which types of display are appropriate for various data sets.	--Choose among tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes. --Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system. --Predict outcomes and explain results of mathematical models and experiments.

Standard 7. Problem Solving

Students make decisions about how to approach problems and communicate their ideas.

Indicator	<i>FlyBy Math™</i> Activities
8.7.1 Analyze problems by identifying relationships, telling relevant from irrelevant information, sequencing and prioritizing information, and observing patterns.	--Apply mathematics to predict and analyze aircraft conflicts and validate through experimentation.
8.7.2 Make and justify mathematical conjectures based on a general description of a mathematical question or problem.	--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system. --Predict outcomes and explain results of mathematical models and experiments.

Students use strategies, skills, and concepts in finding and communicating solutions to problems.

Indicator	<i>FlyBy Math™</i> Activities
8.7.4 Apply strategies and results from simpler problems to solve more complex problems.	--Compare airspace scenarios for both the same and different starting conditions and the same and different rates.
8.7.5 Make and test conjectures by using inductive reasoning.	--Predict outcomes and explain results of mathematical models and experiments. --Compare predictions, calculation, and experimental evidence for several aircraft conflict problems.
8.7.6 Express solutions clearly and logically by using the appropriate mathematical terms and notation. Support solutions with evidence in both verbal and symbolic work.	--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system. --Predict outcomes and explain results of

	mathematical models and experiments.
8.7.9 Use graphing to estimate solutions and check the estimates with analytic approaches.	<p>--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes.</p> <p>--Compare predictions, calculation, and experimental evidence for several aircraft conflict problems.</p>
8.7.10 Make precise calculations and check the validity of the results in the context of the problem.	<p>--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.</p> <p>--Apply mathematics to predict and analyze aircraft conflicts and validate through experimentation.</p>
<i>Students determine when a solution is complete and reasonable and move beyond a particular problem by generalizing to other situations.</i>	
Indicator	<i>FlyBy Math™ Activities</i>
8.7.11 Decide whether a solution is reasonable in the context of the original situation.	<p>--Apply mathematics to predict and analyze aircraft conflicts and validate through experimentation.</p> <p>--Predict outcomes and explain results of mathematical models and experiments.</p>
8.7.12 Note the method of finding the solution and show a conceptual understanding of the method by solving similar problems.	<p>--Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.</p> <p>--Use tables, graphs, and equations to solve aircraft conflict problems.</p>